Better Buildings Residential Network Peer Exchange Call Series:

A Review of the Historic Past Year in Energy Efficiency

December 10, 2020

Agenda and Ground Rules

- Agenda Review and Ground Rules
- Opening Poll
- Residential Network Overview and Upcoming Call Schedule
- Featured Speakers:
  - **Steve Nadel**, American Council for an Energy-Efficient Economy
  - **Lotte Schlegel**, Institute for Market Transformation
- Open Discussion
- Closing Poll and Announcements

Ground Rules:

1. **Sales of services and commercial messages are not appropriate** during Peer Exchange Calls.
2. Calls are a safe place for discussion; **please do not attribute information to individuals** on the call.

The views expressed by speakers are their own, and do not reflect those of the Dept. of Energy.

Better Buildings Residential Network

Join the Network

Member Benefits:

- Recognition in media and publications
- Speaking opportunities
- Updates on latest trends
- Voluntary member initiatives
- One-on-One brainstorming conversations

Commitment:

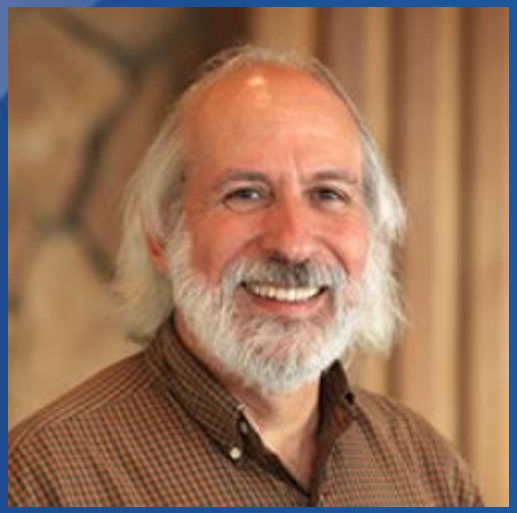
- Members only need to provide *one number*: their organization's number of residential energy upgrades per year, or equivalent.

Upcoming Calls (2nd & 4th Thursdays):

- Jan 14: A Look Ahead at the Coming Year in Energy Efficiency
- Jan 28: Diversity and Inclusion in Residential Energy Efficiency: What's Being Done & How Is It Working?

Peer Exchange Call summaries are posted on the Better Buildings website a few weeks after the call

For more information or to join, for no cost, email bbresidentialnetwork@ee.doe.gov, *or go to* energy.gov/eere/bbrn *& click Join*



Steve Nadel

American Council for an Energy-Efficient Economy

U.S. DEPARTMENT OF ENERGY

Buildings Energy Efficiency in 2020... and Beyond

Steven Nadel, ACEEE

BBRN Webinar

December, 2020

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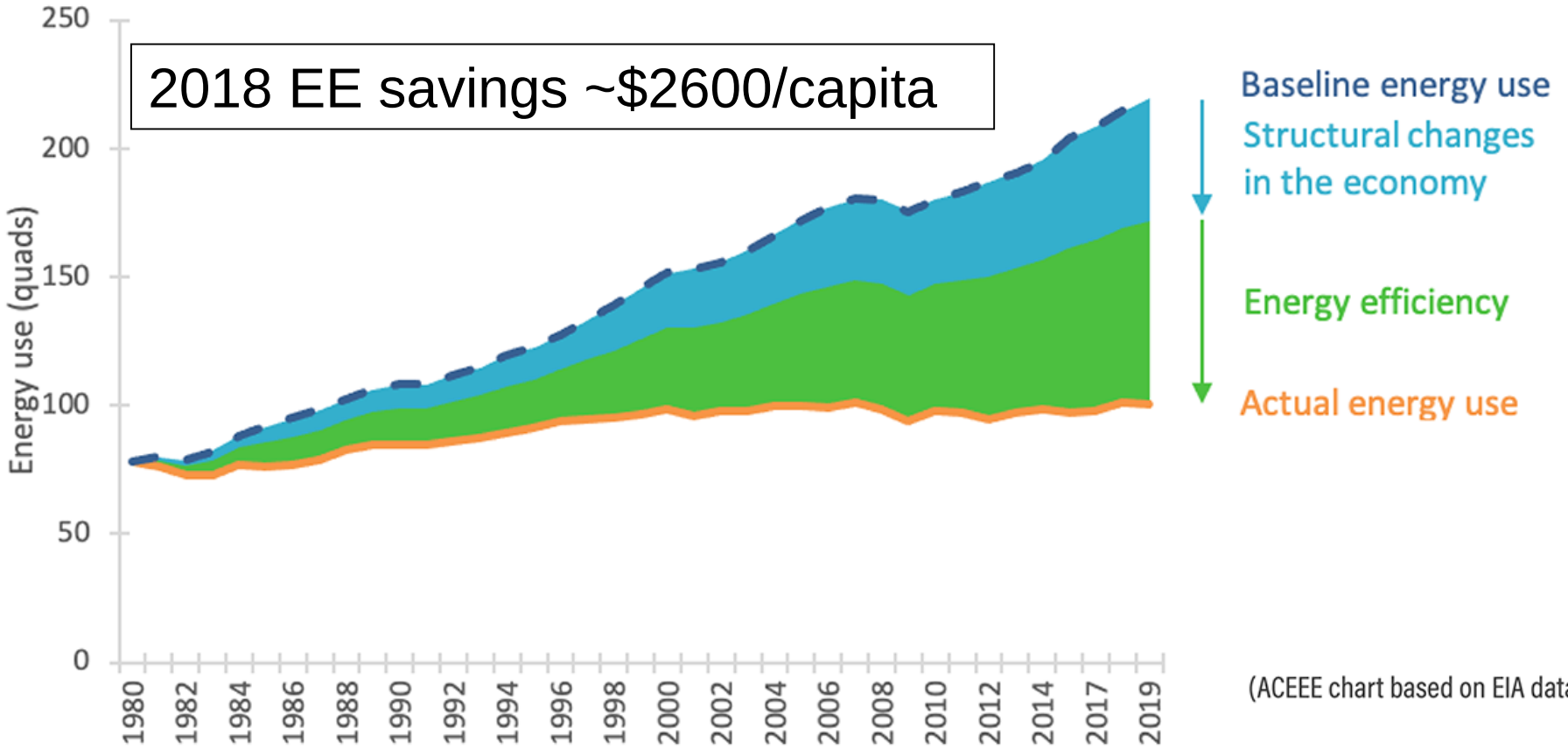
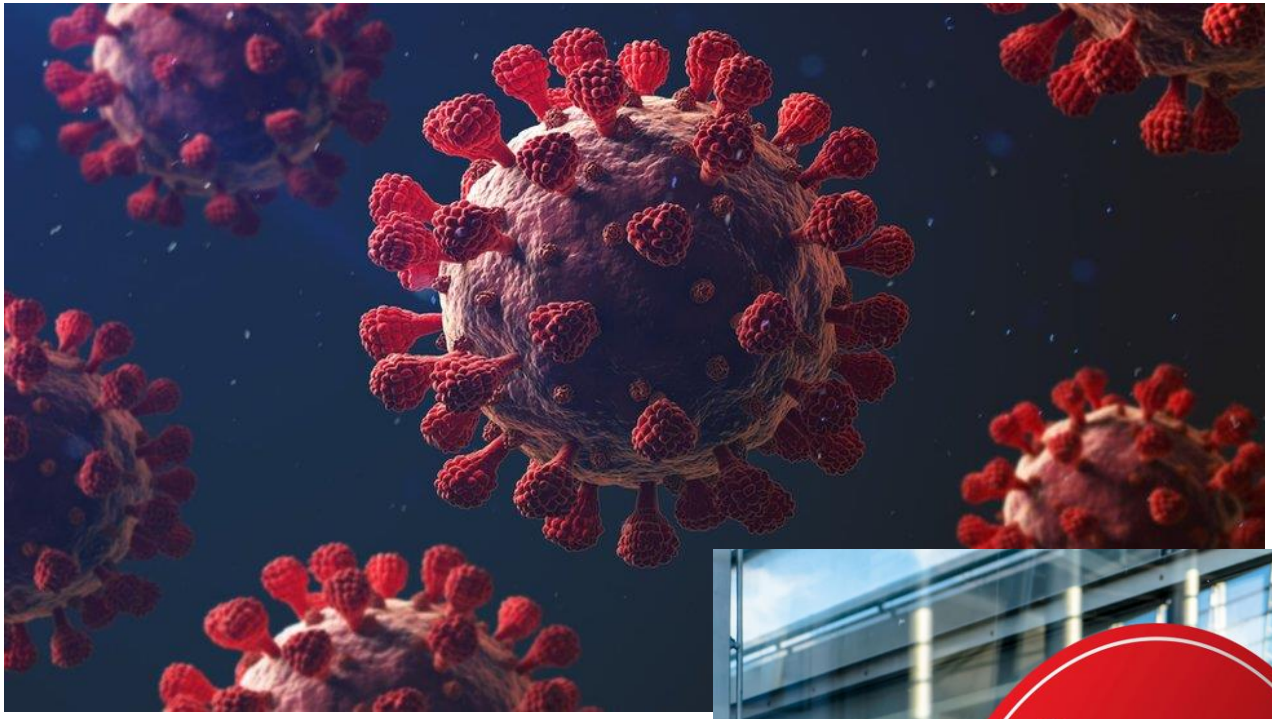
40 Years of Progress

U.S. Energy Consumption

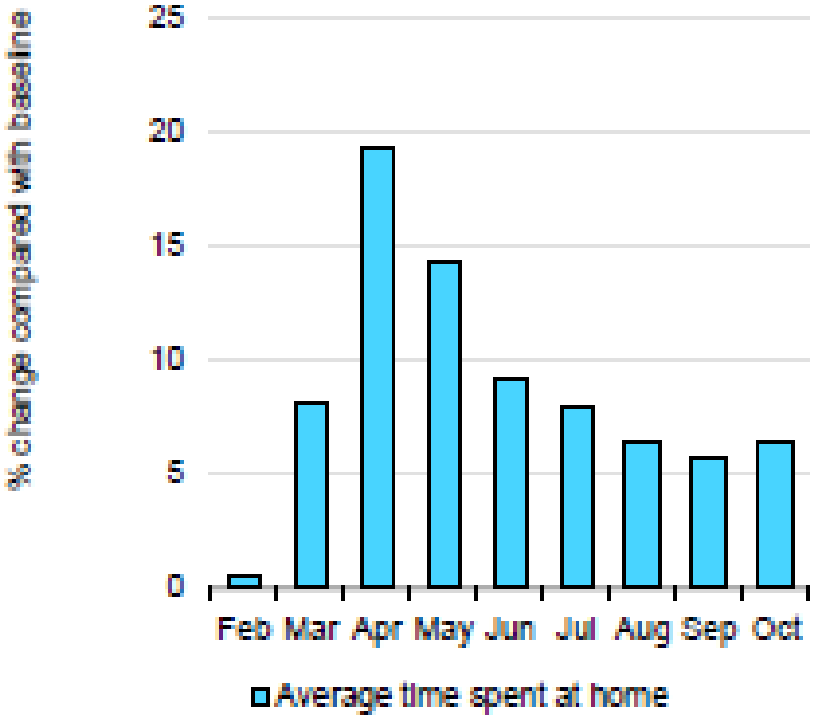


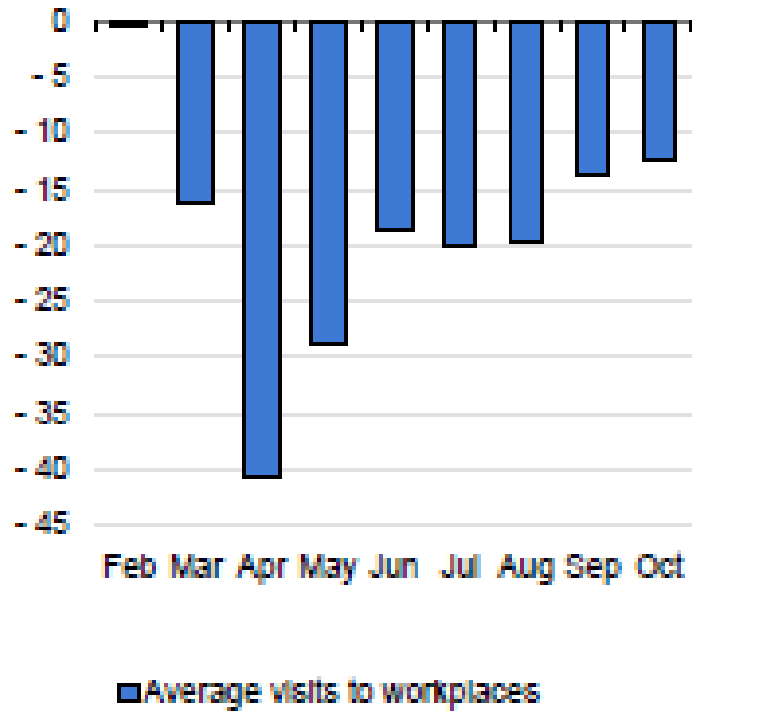
(ACEEE chart based on EIA data)




Sorry, we're
CLOSED
due to COVID-19
restrictions

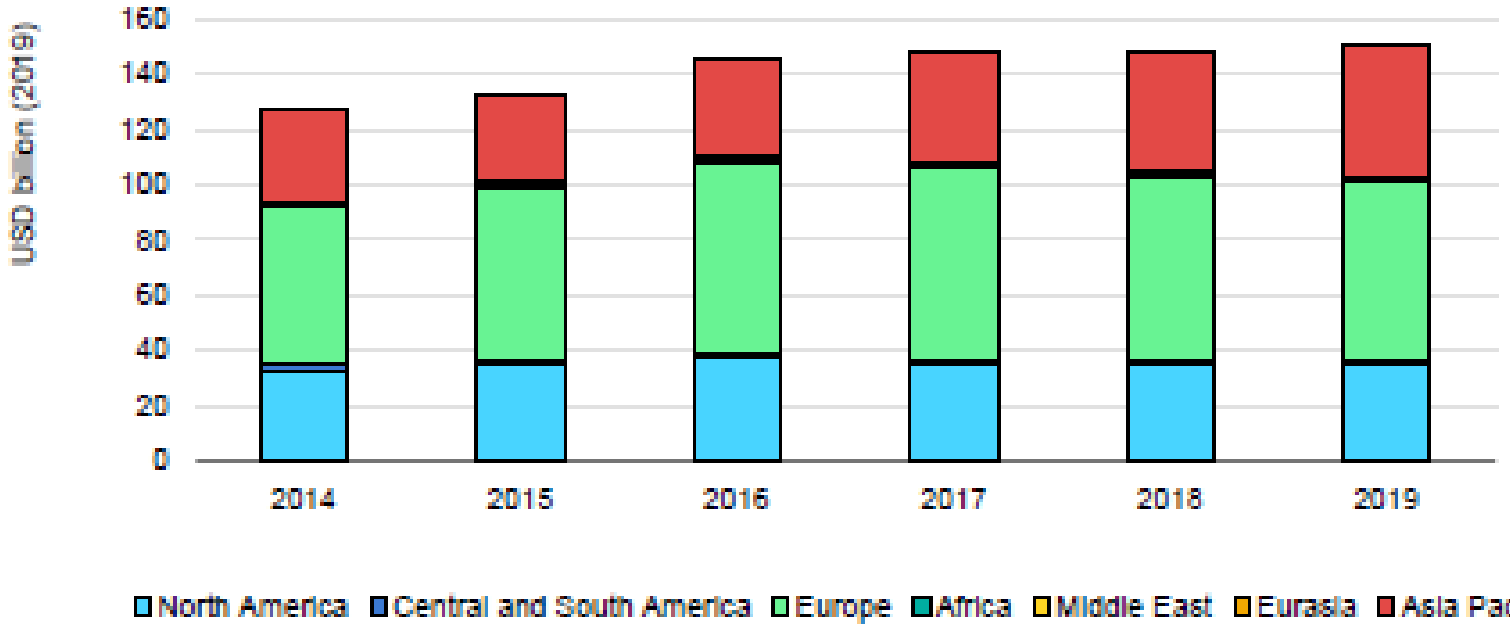
Figure 2.1 Changes to average time spent at home (left) and visitors to workplaces (right), average over selected countries





Source: IEA *Energy Efficiency 2020*

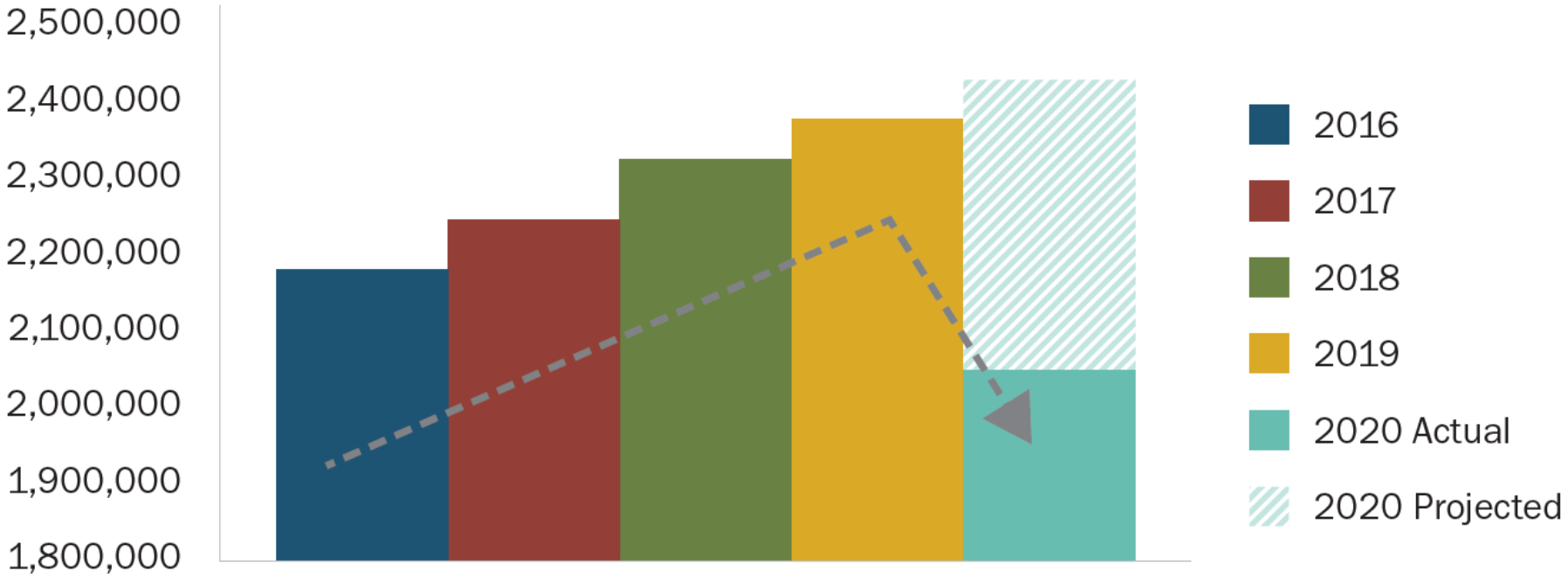
Figure 9.6 Annual investment in building energy efficiency by world region, 2014-19



In 2020 IEA Projects 9% decline in all-sector EE investments

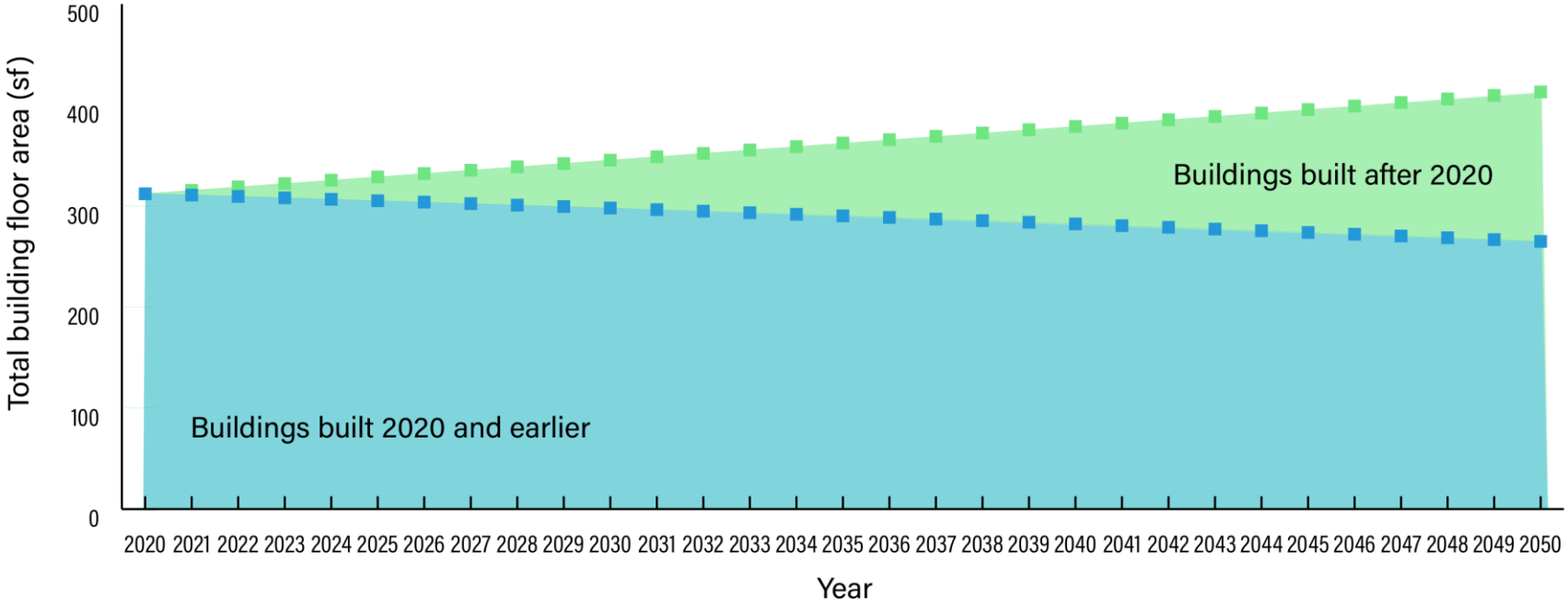
Source: IEA *Energy Efficiency 2020*

U.S. Energy Efficiency Jobs: History



Source: Energy Efficiency Jobs in America, Nov. 2020
https://e4thefuture.org/energy-efficiency-jobs-are-best-bet-for-recovery-in-2021-report-reveals/

New and Existing Buildings as Share of Building Floor Area (Residential + Commercial)



Source: ACEEE calculations based on data in EIA AEO 2020.

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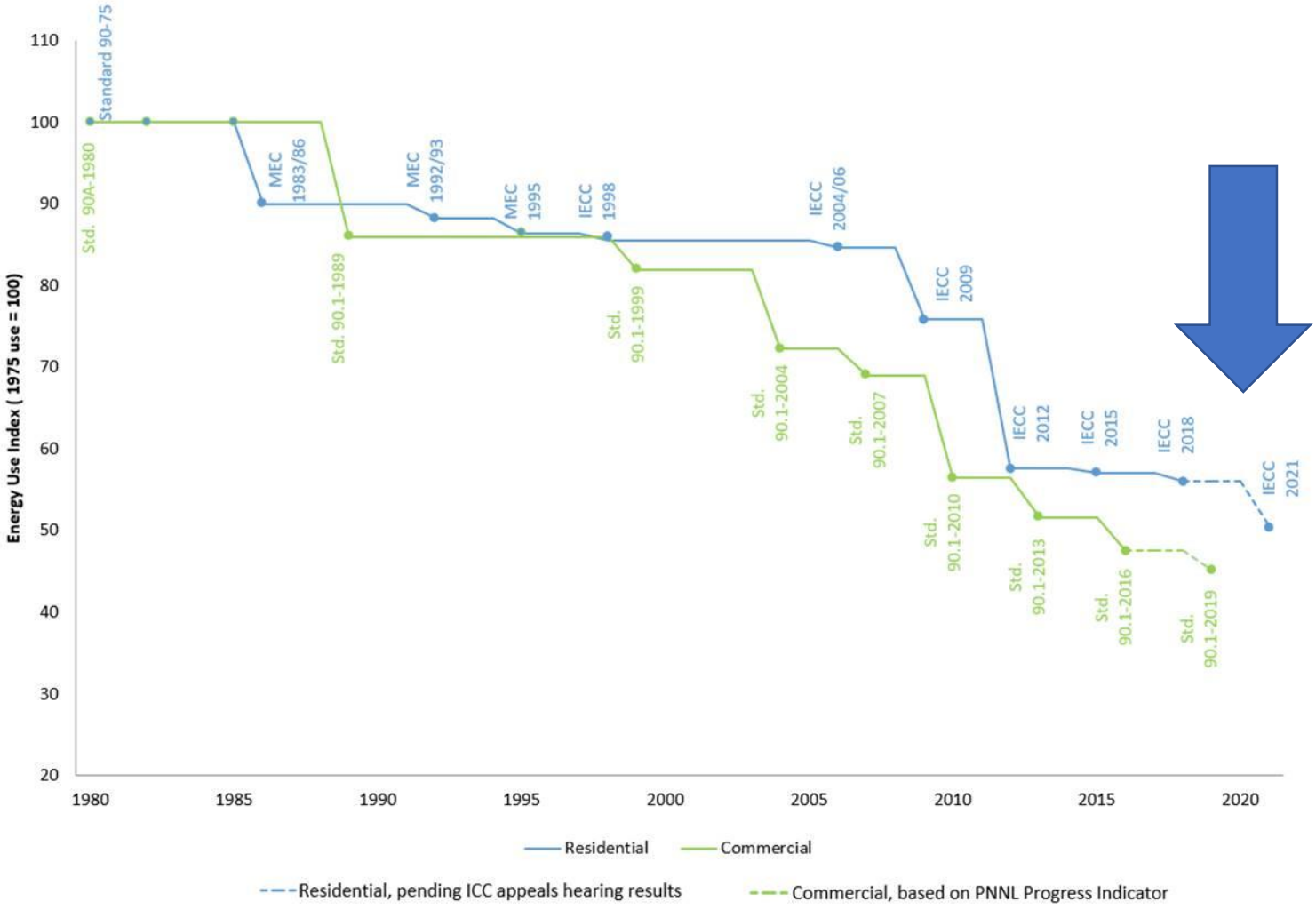
Building Energy Code Progress



Source: Data from Pacific Northwest National Laboratory & U.S. DOE Building Codes Program, except 2021 which are ACEEE estimates

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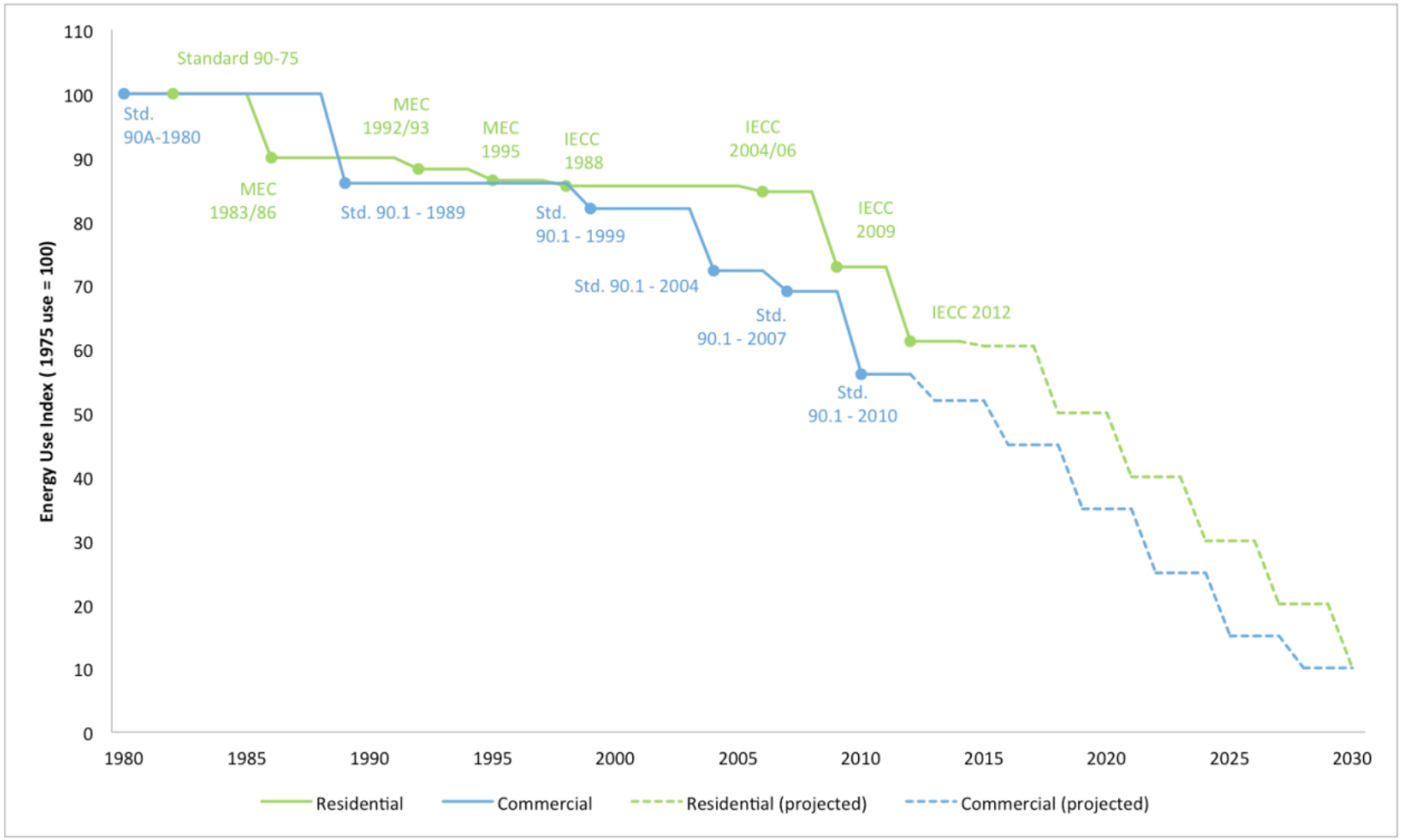
State Code Effective in 2020 or 2021
(2018 IECC or similar)

- Delaware
- Idaho
- Maine
- New Jersey
- New Mexico
- New York
- Vermont
- Minnesota (commercial only)
- Nevada (residential only, ~90% of new homes)

Code Goal



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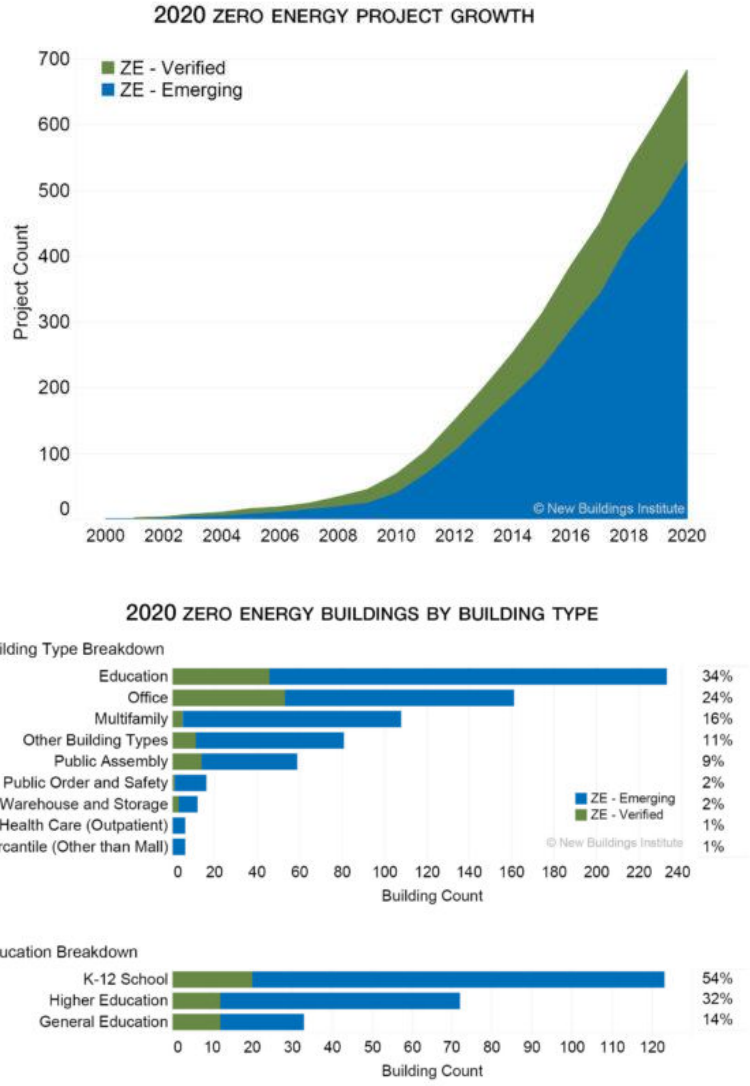
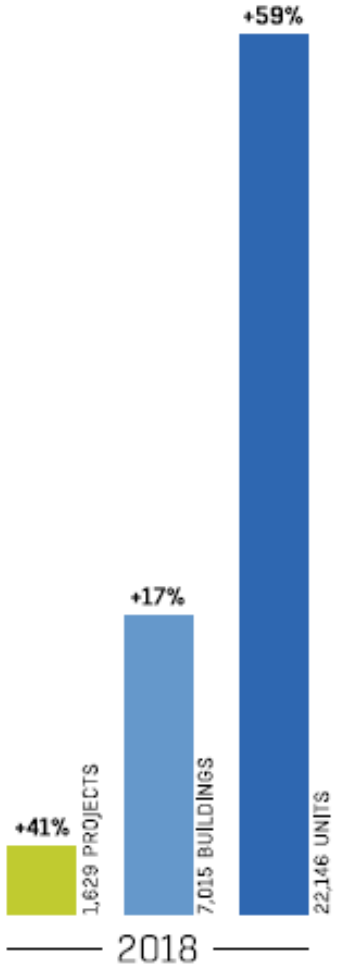
Commercial and Multifamily Buildings



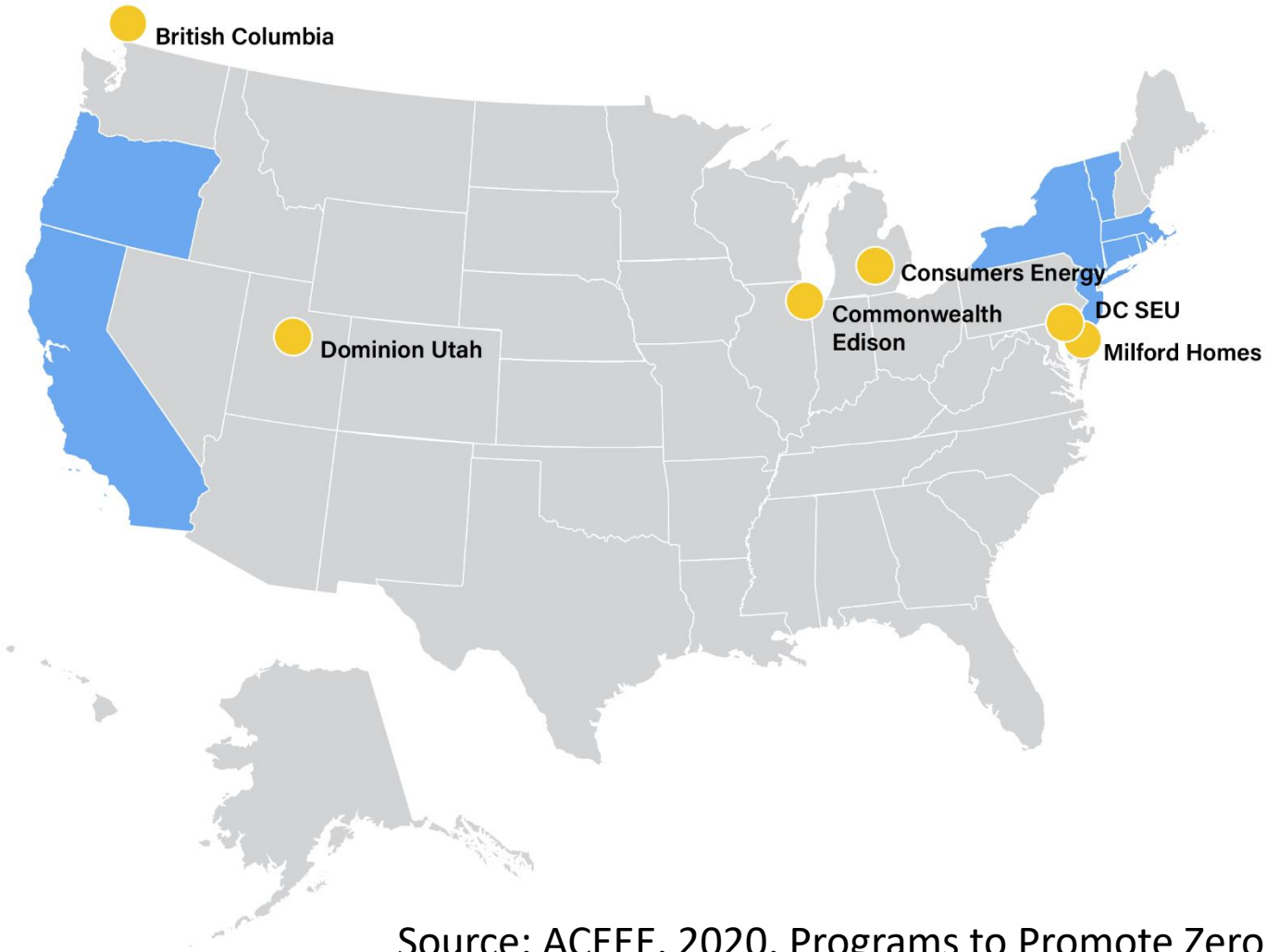
Homes and Apartments

(U.S. and Canada)



Source: NBI and Team Zero

Zero Energy Home and Building Programs



Source: ACEEE, 2020, Programs to Promote Zero Energy Homes and Buildings

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Estimated Retrofit Rates

Residential

HPwES: 87k/yr

WAP: 34k/yr

Together 0.1%/yr of homes

Other efforts double this??

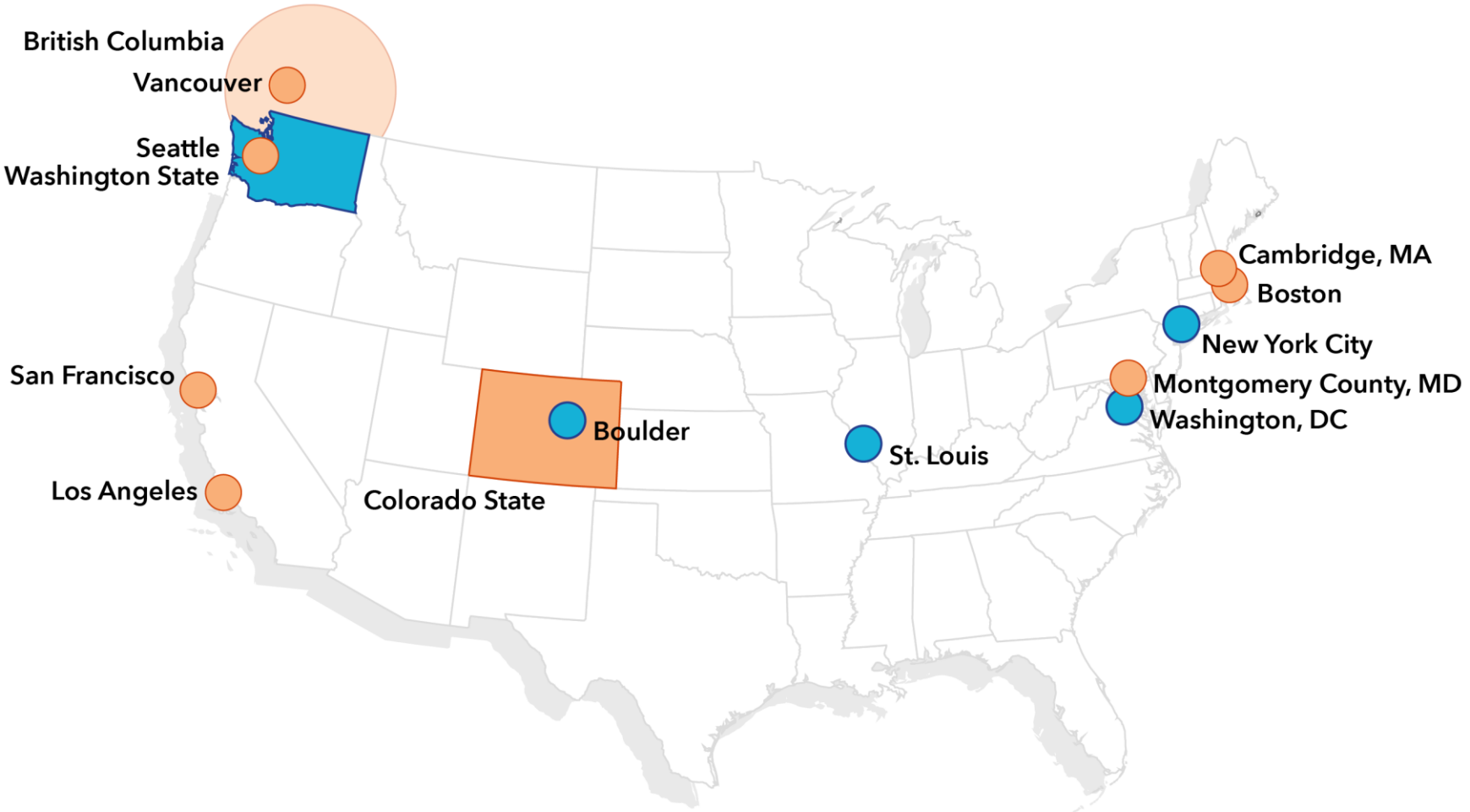
Commercial

CBECS: 14% received HVAC retrofits over 18 yrs

If add lighting and other retrofits and assume no overlap, 39% over 18 yrs

This is 0.8-2.2%/yr of the existing building stock

Building Performance Standards



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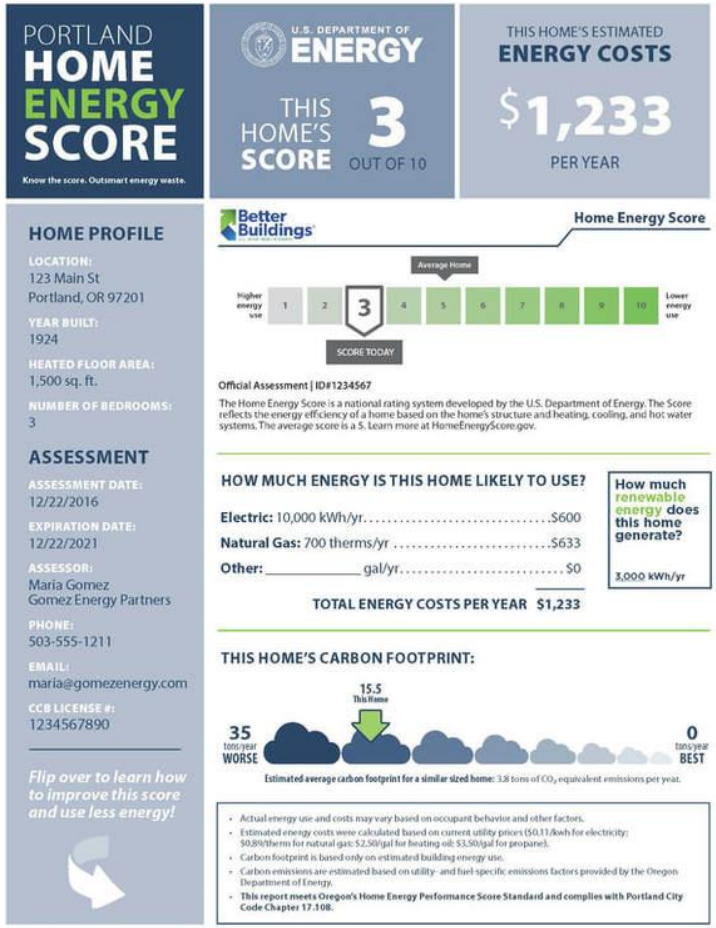
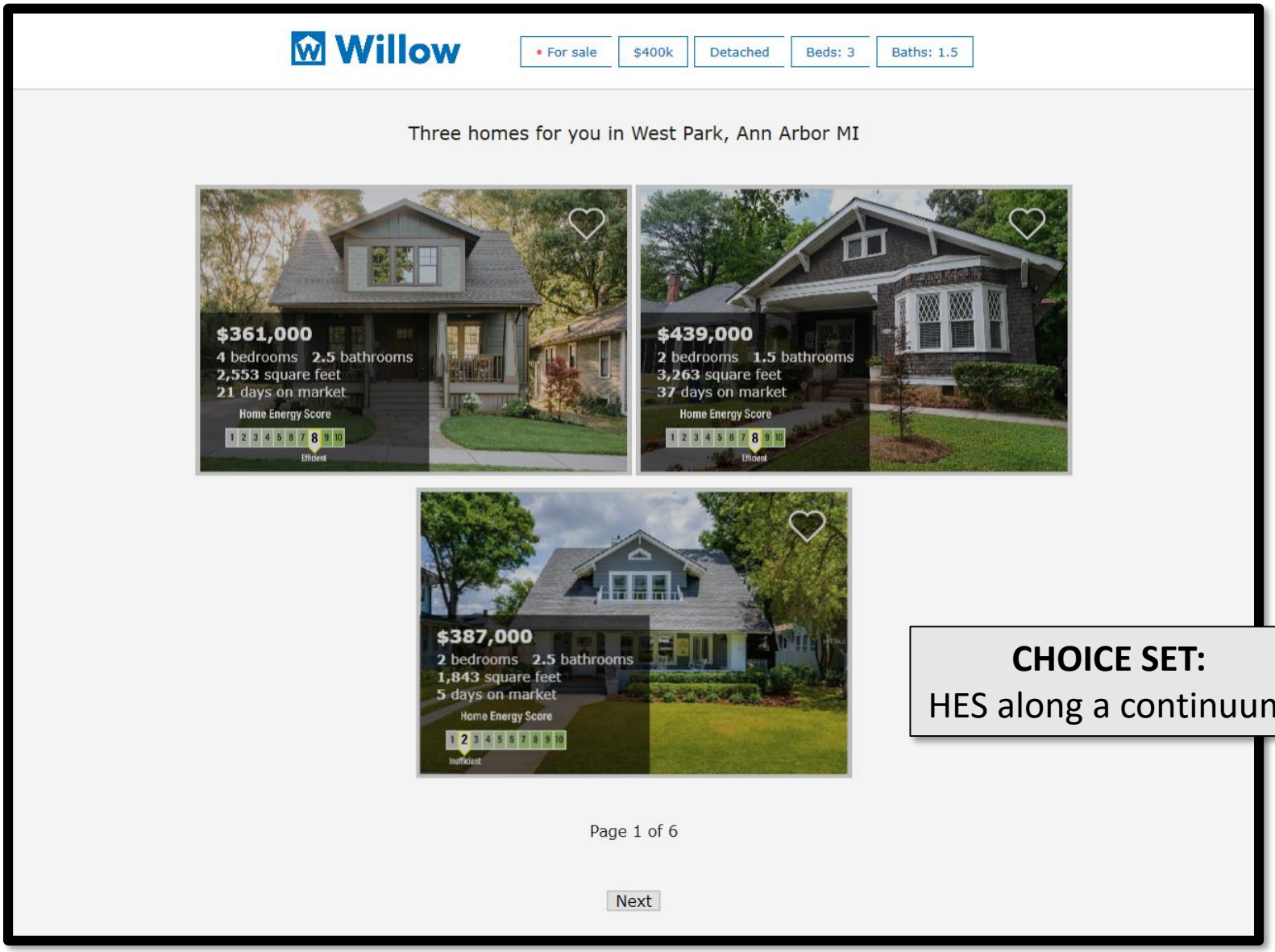
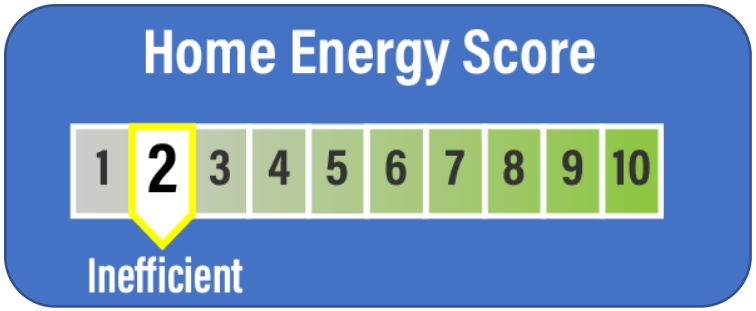
Home Energy Disclosure

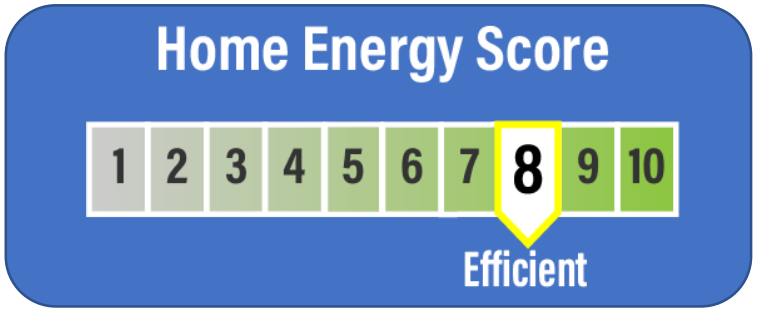




CHOICE SET:
HES along a continuum

Click efficient listings? - YES

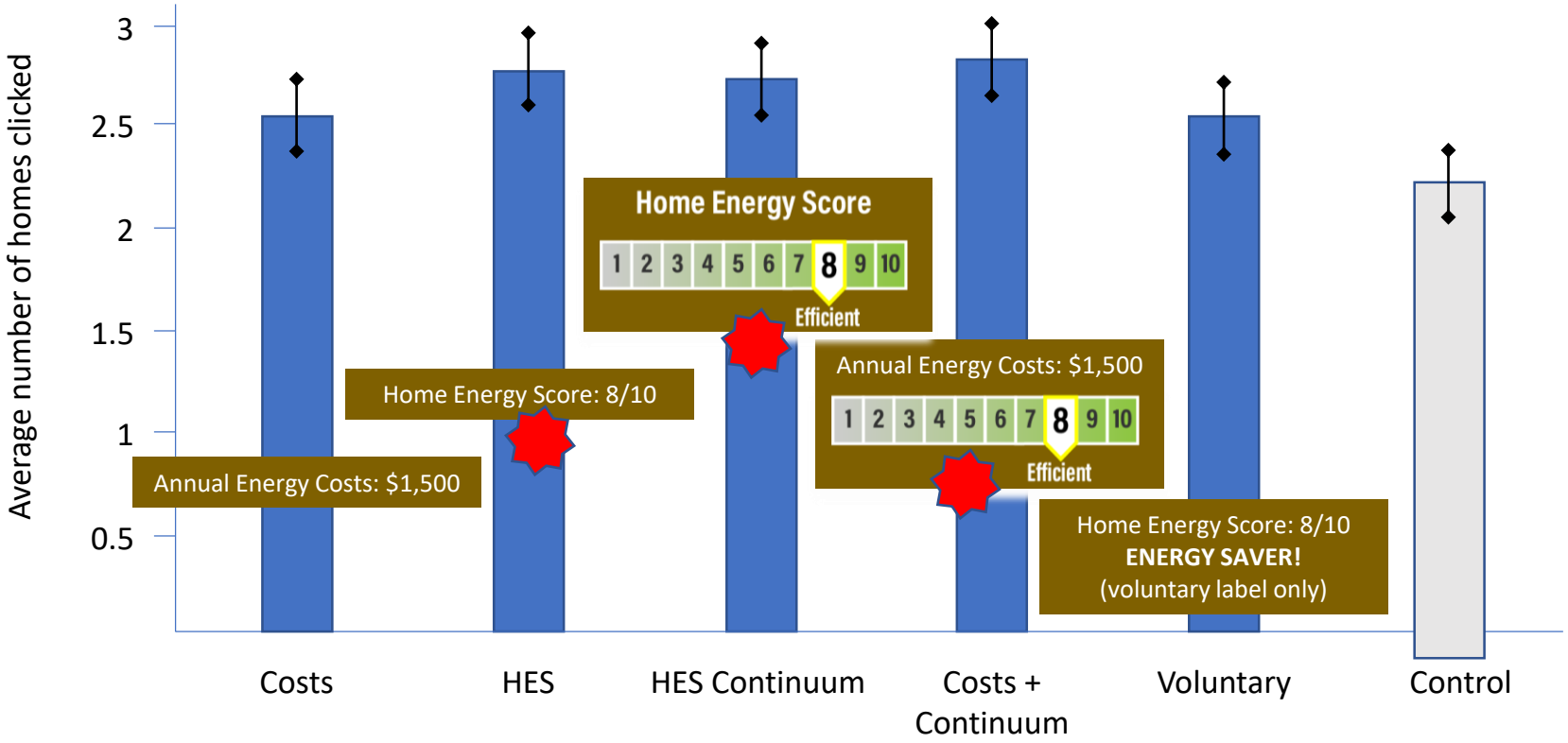




23% less often

14% more often

Clicking the most efficient option



Source: ACEEE 2020, *Valuing Efficiency by Clicking on Energy Efficient Real Estate Listings*

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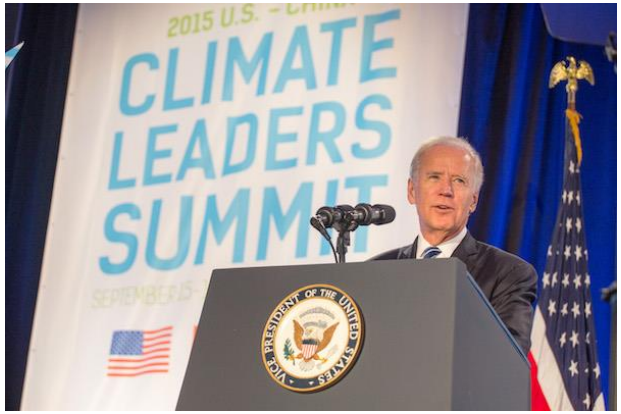
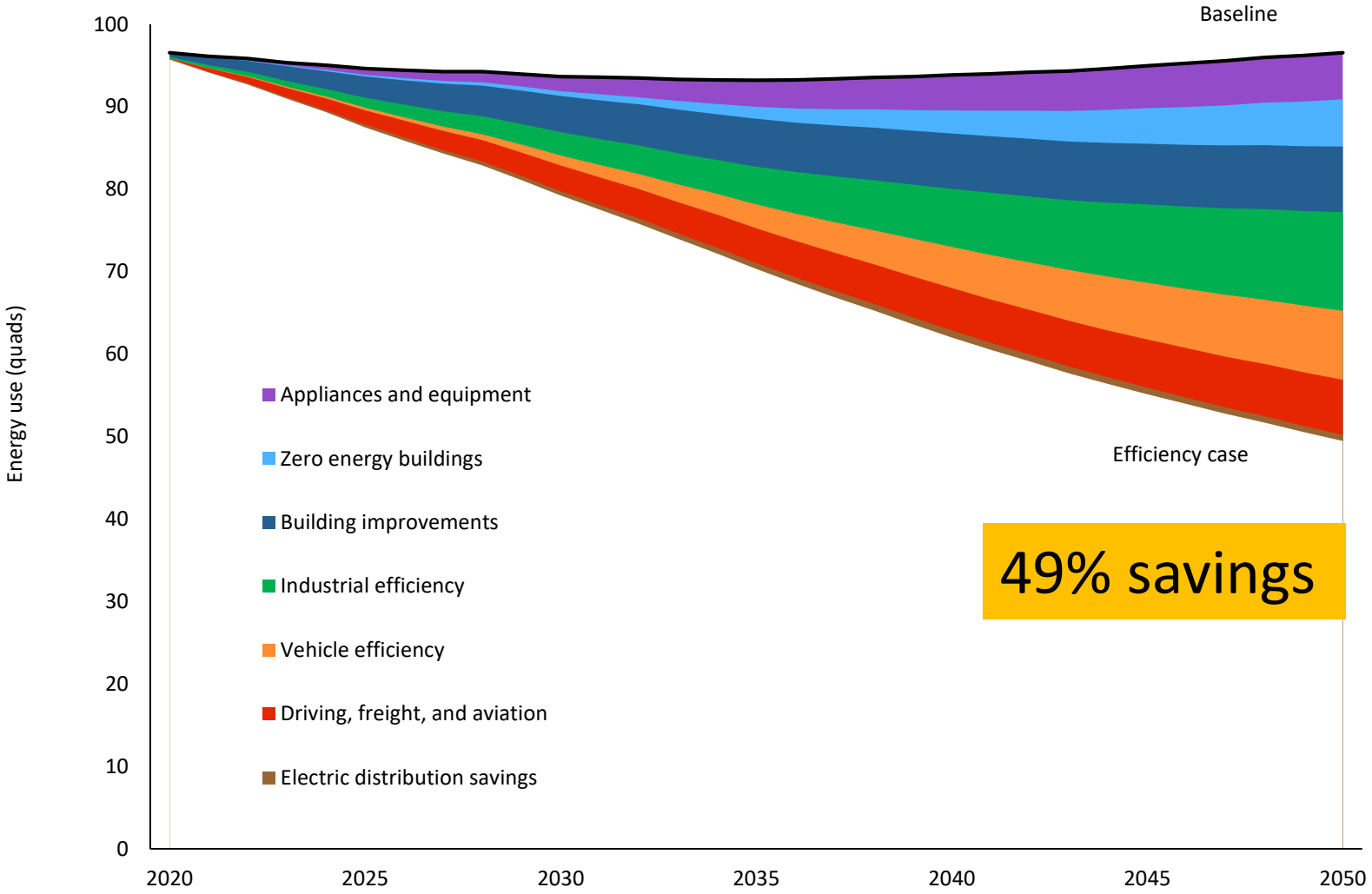
Utility Sector Programs


TRUMP
DIGS
COAL


2015 U.S.
CLIMATE
LEADERS
SUMMIT


Text UNITED to 30330
BUILD BACK
BETTER
BIDEN

Energy Efficiency Can Reduce Energy Use and GHG Emissions in Half



Source: ACEEE, 2019, *Halfway There*

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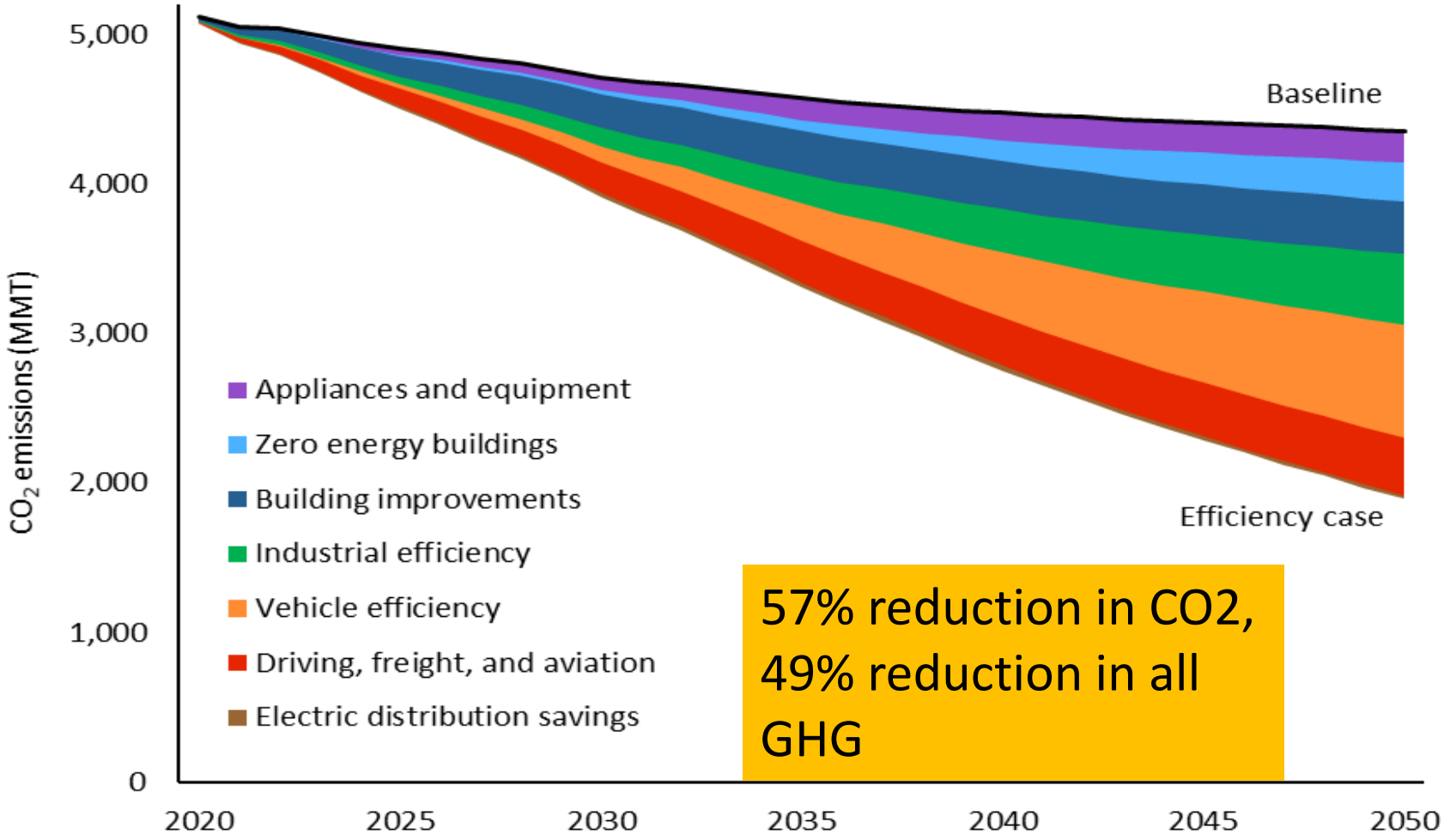
Opportunity Analysis: Emissions Reductions



Source: ACEEE, 2019, *Halfway There*

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Federal Policy in 2021

- Administrative actions
  - **CAFE**
  - **Appliance standards**
  - **Building codes – certify new codes, TA, manufactured housing, maybe federally assisted**
- COVID and budget
  - **Schools, WAP, modest other budget increases**
  - **Tax extenders and some new programs (e.g. HOMES)?**
- Regular order
  - **Transportation bill**
  - **Infrastructure bill?**
  - **Energy bill?**
    - Industrial policies
  - **Work on longer term climate bill, such as CES**

Potential Recovery Investments

	Federal investment (PV $billion)	Jobs created 2020 - 2023 (thousand job-years)	Total jobs created (thousand job-years)	CO_2 emissions avoided (MMT)	Energy cost savings (PV $billion)
Buildings					
LI weatherization	4.0	30	14	12	1.7
LMI multifamily	6.5	70	98	54	8.9
HOPE4HOMES	4.7	42	85	58	9.6
Building incentives	20.2	235	567	340	53.3
Transportation					
EV incentives	31.0	40	219	138	18.8
Transport CO_2 progs.	6.3	89	161	52	7.7
Industrial programs	1.1	43	66	186	13.5
Cross-cutting					
State energy program	2.7	27	49	32	4.5
Local block grants	2.4	27	31	19	3.4
Small business progs.	5.6	60	44	40	6.2
Total	83.5	662	1,333	906	123.3

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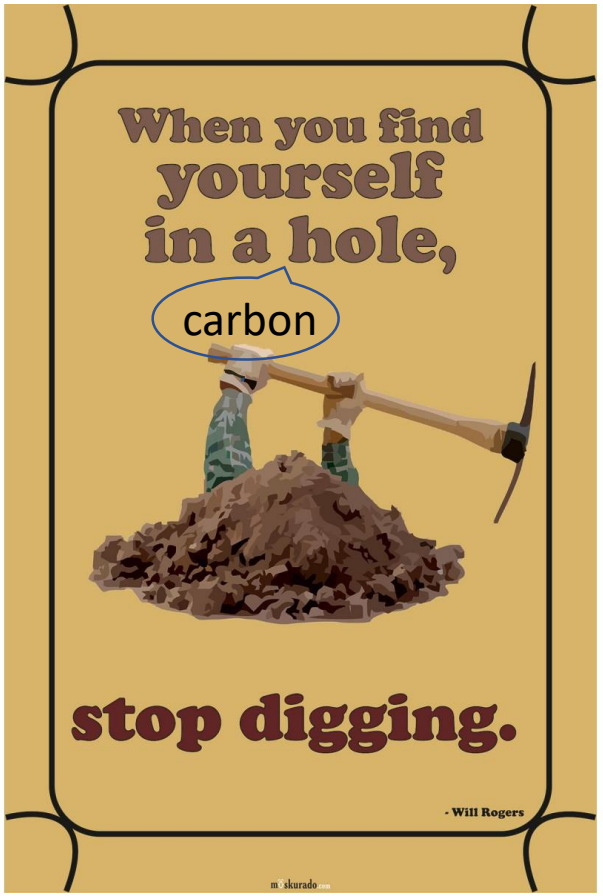
Source: ACEEE, 2020, Growing a Greener Economy: Job and Climate Impacts from Energy Efficiency Investments

Conclusions

- Despite COVID, some significant gains in 2020
- As recover from the recession and perhaps “Build Back Better”, hopefully 2021 will be even better



Contact Information

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Institute for Market Transformation

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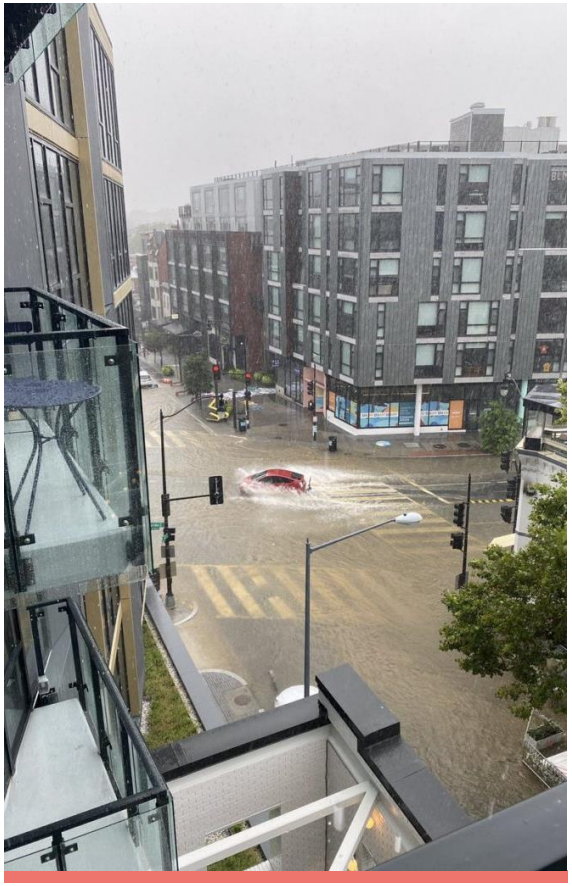
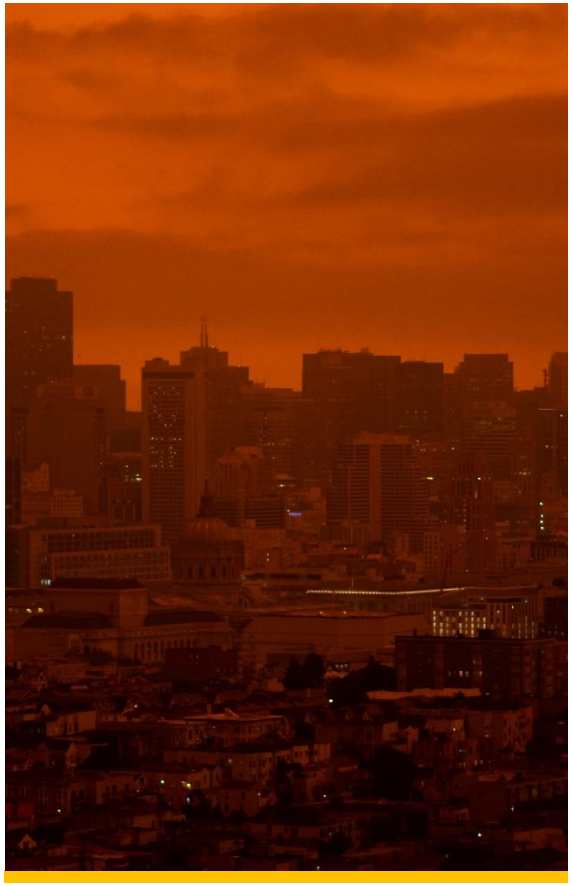
Lessons Learned in 2020: Scaling Residential Retrofits

December 10, 2020

Photo by Bruce Damonte,

The Case For Improving The Nation's Housing is Stronger Than Ever





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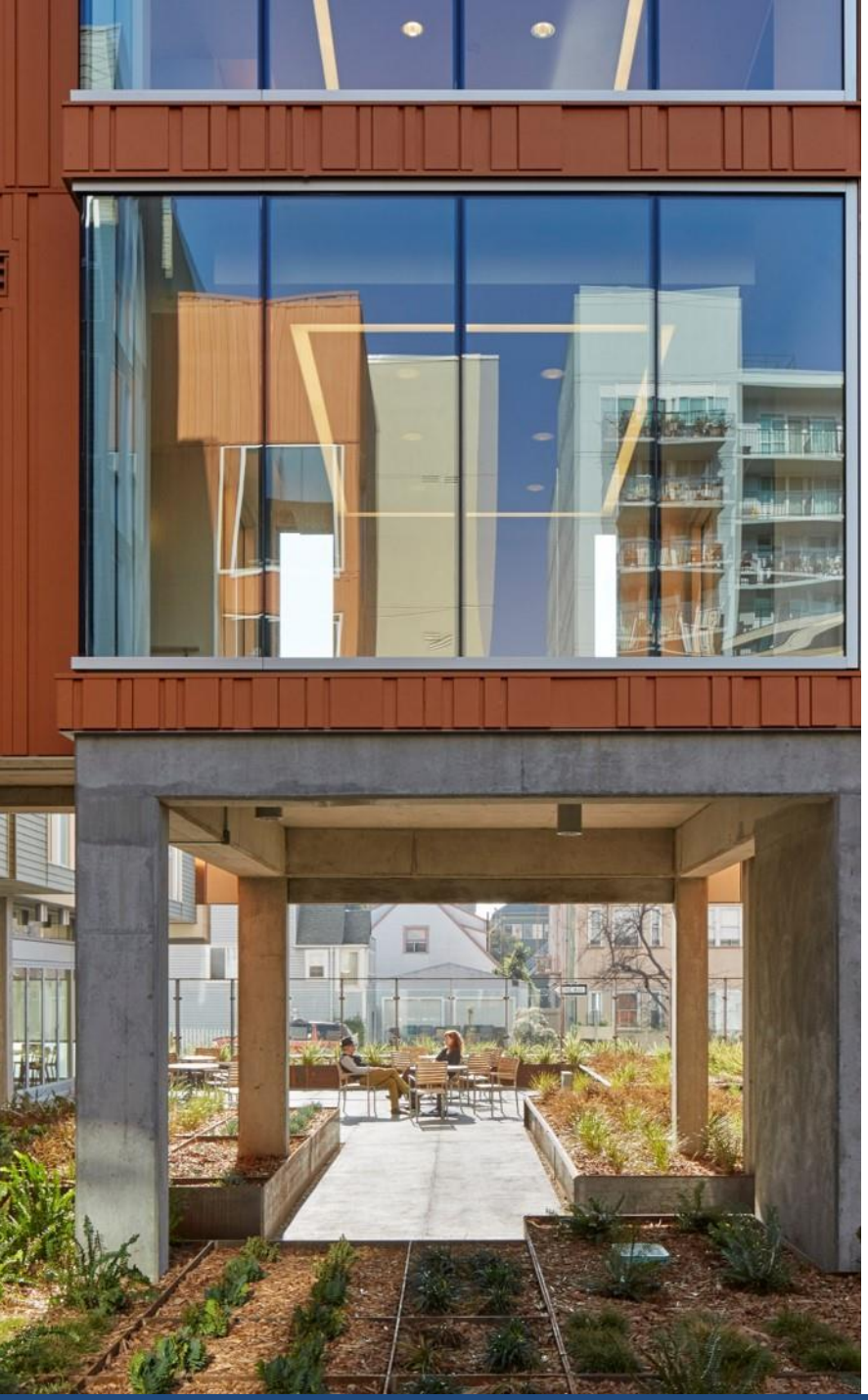

Today's Conversation

1. Driving retrofits at scale
2. Comprehensive retrofits to achieve grid-interactive resilient buildings
3. Programs focused for paying for retrofits at scale

Photo by Bruce Damonte,
courtesy of David Baker Architects

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Second and Delaware, courtesy Arnold Development Group

About The Institute for Market Transformation (IMT)

Mission

Catalyze widespread and sustained demand for high-performing buildings.

How we work

Advancing policies and business practices that enable people to build and operate healthy, high-performing buildings.

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Which Best Describes You?

1. Work on a residential retrofit program (implementer or contractor)
2. Work for local or state government
3. Work for financial institution
4. Researcher
5. Evaluate program effectiveness
6. Other (Respond via Questions Box)

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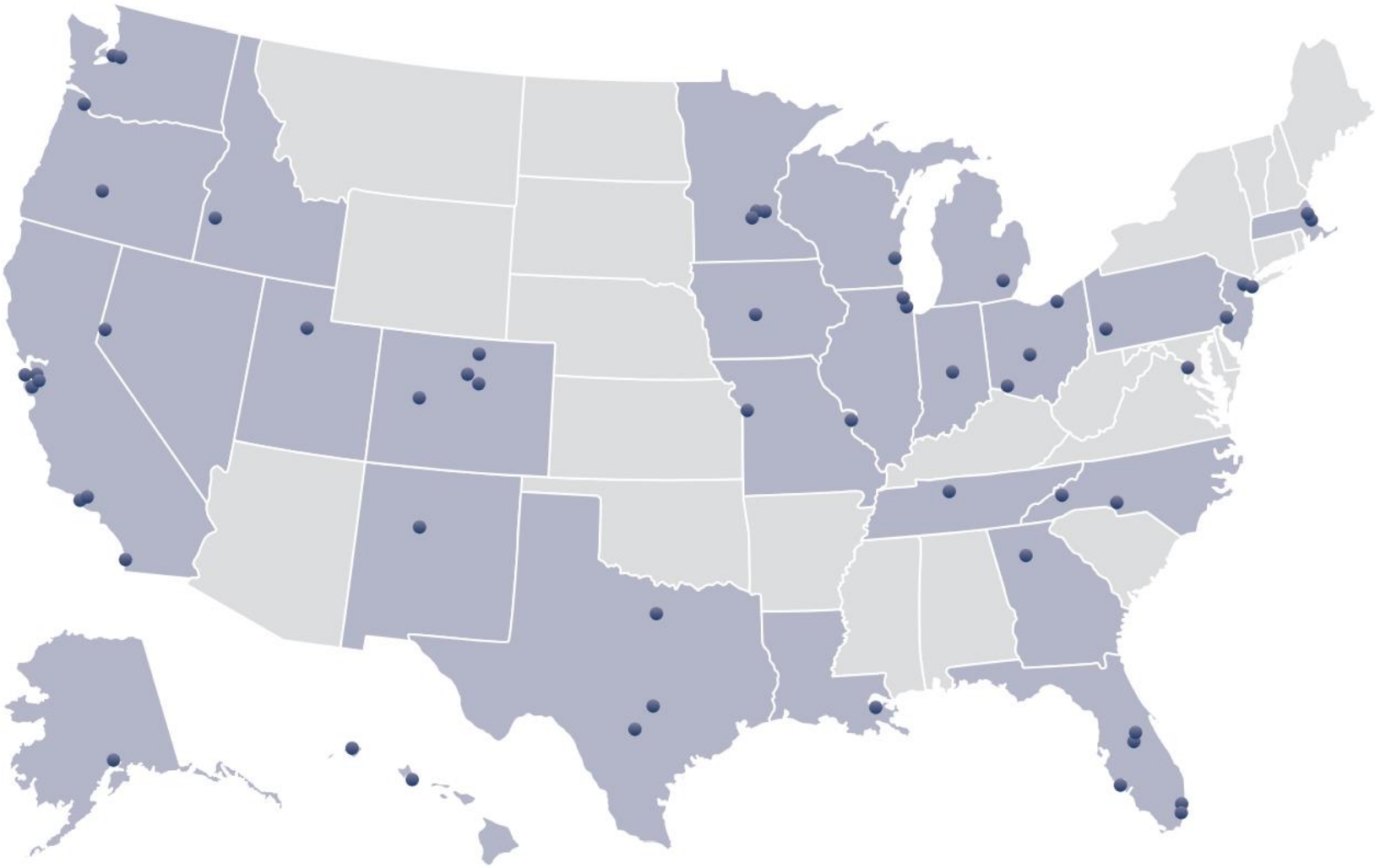
Where IMT Has Engaged In 2020



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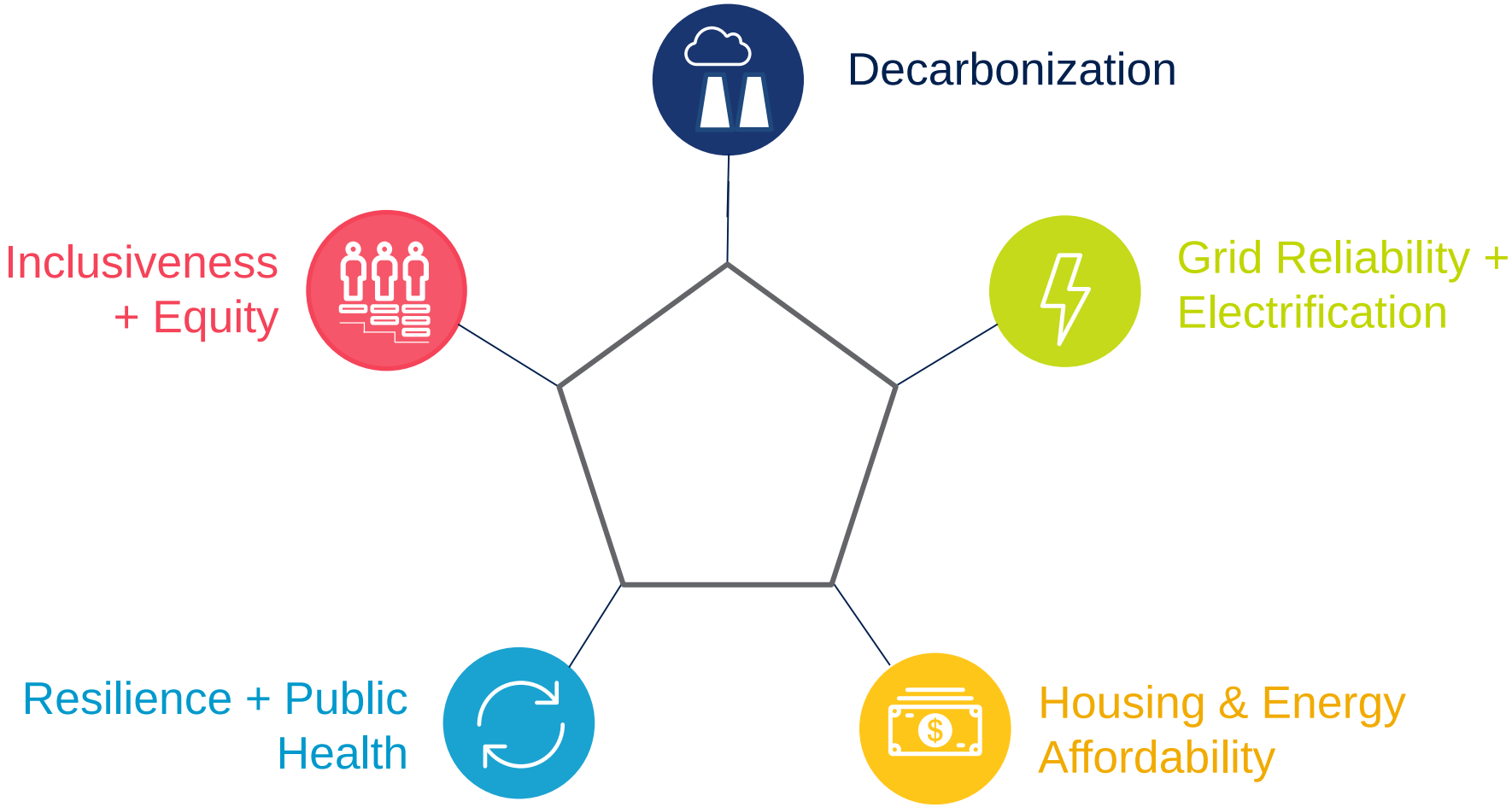
Common Community Priorities…



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2020: Fundamental Change To Local Buildings Policy

Building Performance Standards are the most powerful policy tool available to drive improved building performance

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U.S. City, County, and State Policies for Existing Buildings: Building Performance Standards

Building Rating
SHARING TRANSPARENCY FOR A MORE EFFICIENT FUTURE

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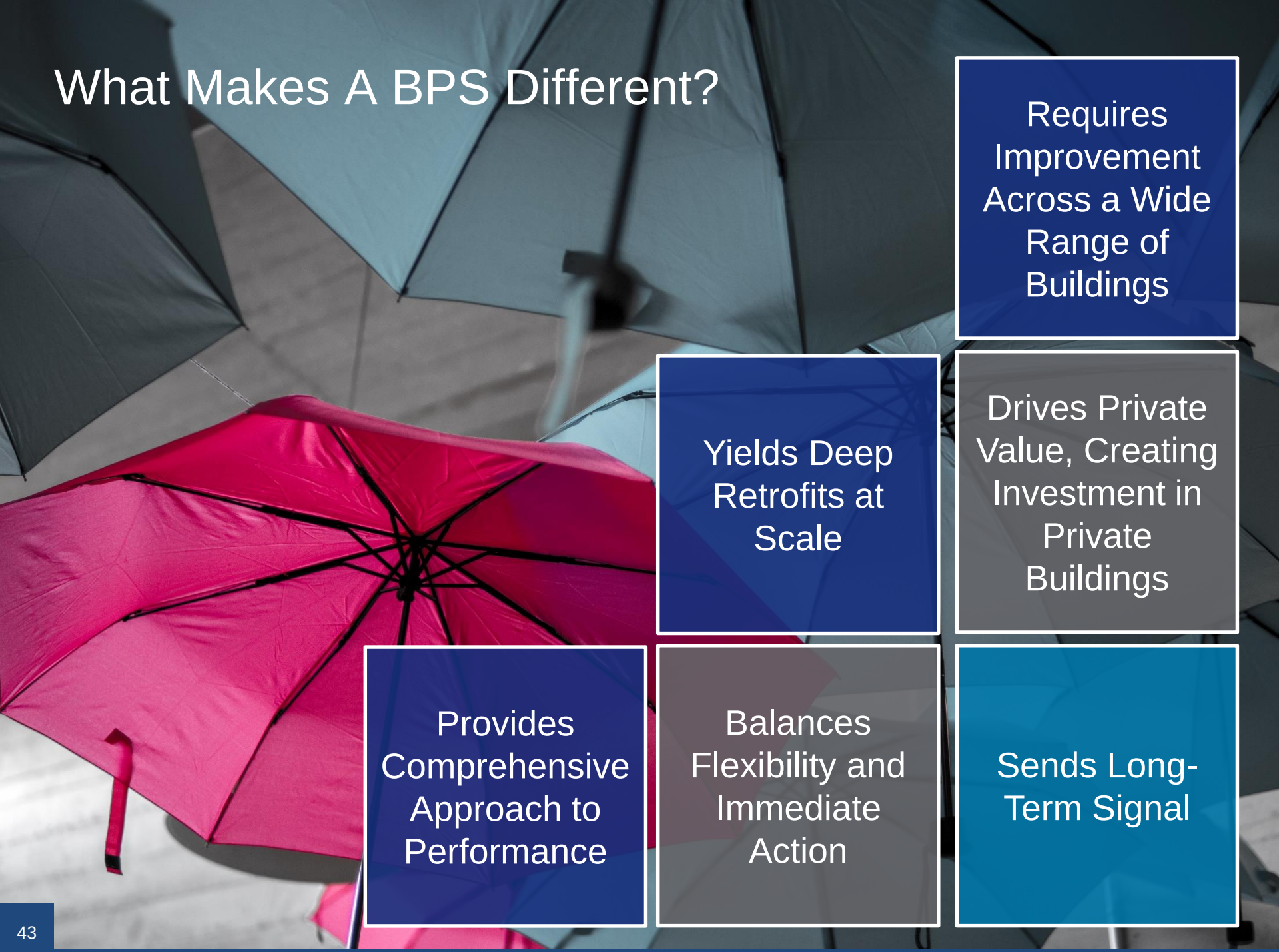
What Makes A BPS Different?



- Requires Improvement Across a Wide Range of Buildings
- Yields Deep Retrofits at Scale
- Drives Private Value, Creating Investment in Private Buildings
- Provides Comprehensive Approach to Performance
- Balances Flexibility and Immediate Action
- Sends Long-Term Signal

Significance For Housing

- Requires comprehensive approach
- Flexibility to advance multiple community priorities
- Anti-displacement and affordable housing protections with the policy

Photo by Bruce Damonte,
courtesy of Leddy Maytum Stacy Architects

Program Design Options To Prioritize Housing Improvements Under BPS

Leverage finance cycle

Capital improvement.

Mortgage and re-financing.

Targeted program

Ramp up existing housing programs where comprehensive.

Compliance path

Provide technical assistance & financing program available as part of policy compliance.

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Scaling Up: Examples to Learn From

Comprehensive resilience retrofits

Financing retrofits at scale

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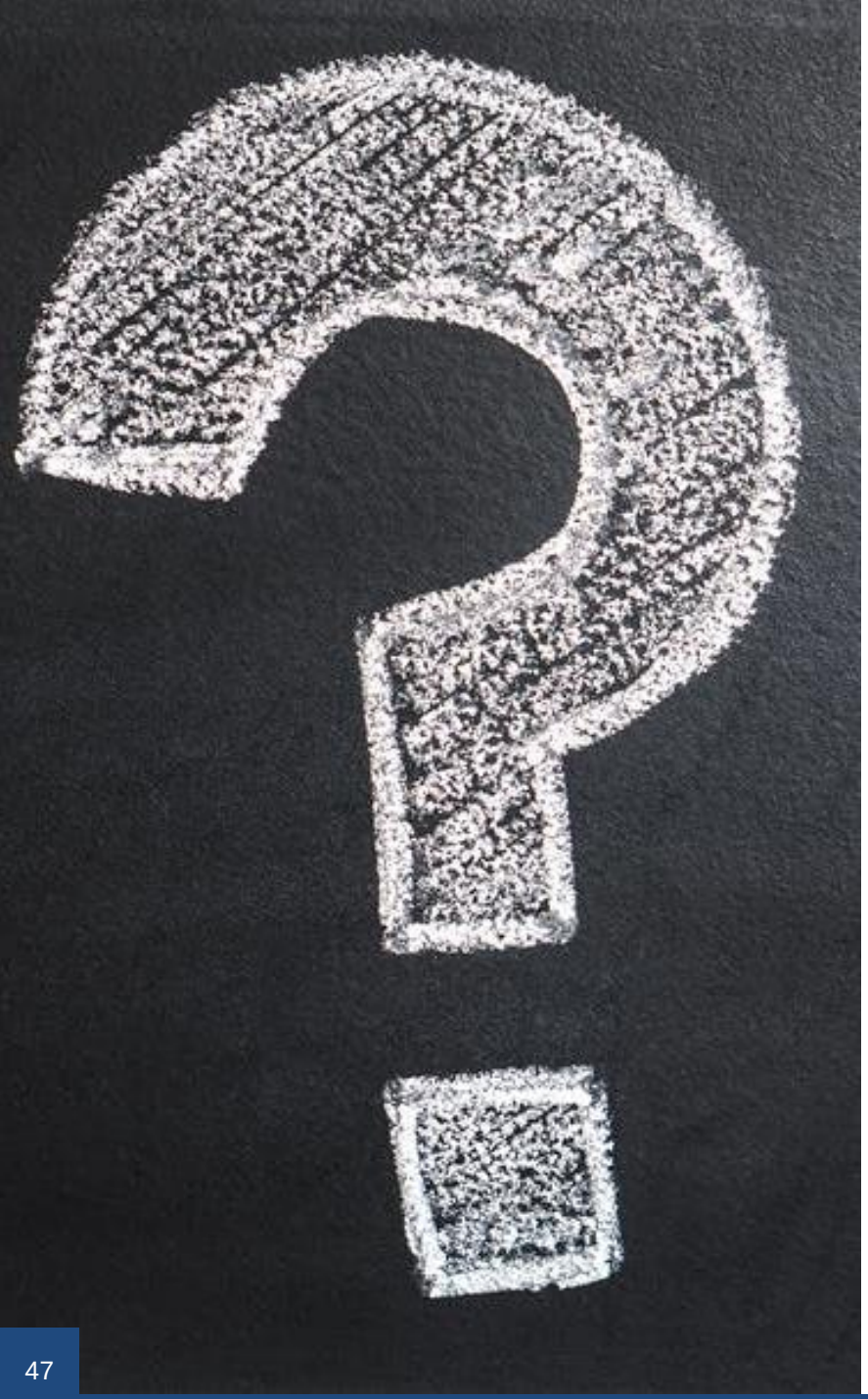

What Do You Think It Will Take to Scale Residential Retrofits?

- ❑ Require improvements at time of refinance/mortgage
- ❑ Targeted program for comprehensive building upgrades
- ❑ Retrofit policy like a building performance standard
- ❑ Something else! You haven't named it yet

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What can WE do?

Contact

Lotte Schlegel, Executive Director

Institute for Market Transformation

lotte@imt.org

New Virtual Sessions from Solar Decathlon on Innovative Homes and Energy Careers

The Solar Decathlon announced a new webinar series starting in September that will include virtual tours of innovatively designed homes and address a variety of topics from the rise in zero energy homes to clean energy careers.

Upcoming DOE Solar Decathlon Virtual Sessions

Register for Upcoming Sessions and Watch Prior Sessions at solardecathlon.gov/virtual_sessions.html

- **Solar Student Leaders of Tomorrow Showcase**
  Wednesday, December 16, 2020, 6–7 p.m. E.T.
- **Resilient Home 411: Strategies to Weather and Recover from Natural Disasters**
  Wednesday, January 20, 2021, 1–2 p.m. E.T.
- **Zero Energy Ready Homes: New and Growing Fast**
  Wednesday, February 17, 2021, 1–2 p.m. E.T.
- **The Future of Solar: A Tour of Cutting-Edge Solar Research with the U.S. Department of Energy**
  Wednesday, March 17, 2021, 1–2 p.m. E.T.
- **Solar Decathlon Build Challenge Team House Tour**
  Friday, April 16, 2021, 1–2 p.m. E.T.
- **Winning Solar Home - The DOE Solar Decathlon Build Challenge Winners**
  Wednesday, May 19, 2021, 1-2 p.m. E.T.


STEM
RISING
U.S. DEPARTMENT OF ENERGY
ENERGY.GOV/STEMRISING

Explore the Residential Program Solution Center

Resources to help improve your program and reach energy efficiency targets:

- Handbooks - explain *why* and *how* to implement specific stages of a program.
- Quick Answers - provide answers and resources for common questions.
- Proven Practices posts - include lessons learned, examples, and helpful tips from successful programs.
- Technology Solutions NEW! - present resources on advanced technologies, **HVAC** & **Heat Pump Water Heaters**, including installation guidance, marketing strategies, & potential savings.

https://rpsc.energy.gov

Thank You!

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Please send any follow-up questions or future call topic ideas to:
bbresidentialnetwork@ee.doe.gov